

Application No.: 10/767,244
Response dated December 16, 2005
Reply to Office Action mailed August 23, 2005

This listing of claims will replace all prior versions, and listings, of claims in the application:

In the Claims:

1. (Original) An implantable medical device for providing therapy to a body comprising:

an elongate central portion;

at least one extendable member having a tip, the extendable member depending from the central portion and being adapted to assume a range of positions, including a compact position, in which the tip is disposed in close proximity to the central portion, and an extended position, in which the tip is disposed at a location distal from the central portion;

at least one therapy element disposed on the extendable member for delivering therapy to the body;

a linkage assembly for position adjustment of the extendable member in situ, the linkage assembly comprising a series of struts that are pivotally linked to one another at a first point and second point, the first point and the second point adapted to move towards each other to compact the extendable member, and away from one another to expand the extendable member;

wherein the extendable member is a span having a first end and a second end that are fastened to the linkage assembly at the first point and the second point respectively, the span adapted to contract between the first point and the second point when the first point and second point are moved towards each other, and expand between the first point

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and the second point when the first point and the second point are moved away from each other.

2. (Original) The implantable medical device of claim 1, wherein the linkage assembly comprises a first link and a second link, the first link pivotally connected to a first strut and second strut, the second link pivotally connected to a third strut and a fourth strut, the first link moveable with respect to the second link to cause the first point and the second point to move toward or away from one another.

3. (Original) The implantable medical device of claim 1, further comprising a sheath that surrounds the span when the extendable member is in the compact position.

4. (Original) The implantable medical device of claim 3, wherein the sheath is removeable after the extendable member has been expanded to the extended position.

5. (Original) The implantable medical device of claim 3, further comprising a locking mechanism to keep the extendable member at a constant position.

6. (Original) The implantable medical device of claim 2, further comprising a sheath that surrounds the span when the extendable member is in the compact position.

7. (Original) The implantable medical device of claim 6, wherein the sheath is removeable after the extendable member has been expanded to the extended position.

8. (Original) The implantable medical device of claim 1, further comprising a locking mechanism to keep the first link and the second link at a constant position

9. (Original) The implantable medical device of claim 8, wherein the locking mechanism comprises a sheath compressed over the first link and the second link.

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10. (Original) The implantable medical device of claim 1, further comprising a tether to limit the separation of the first point and the second point.

11. (Original) The implantable medical device of claim 1, wherein the span folds between the first point and the second point when the span is in the compact position, and unfolds between the first point and the second point when the span is in the extended position.

12. (Original) The implantable medical device of claim 1, further comprising a mechanism for adjusting the relative positions of the first point and the second point.

13. (Currently Amended) An implantable medical device for providing therapy to a body comprising:

an elongate central portion;

at least one extendable member having a tip, the extendable member depending from the central portion and being adapted to assume a range of positions, including a compact position, in which the tip is disposed in close proximity to the central portion, and an extended position, in which the tip is disposed at a location distal from the central portion;

at least one therapy element disposed on the extendable member for delivering therapy to the body;

a linkage assembly for position adjustment of the extendable member in situ, the linkage assembly comprising a first strut and a second strut pivotally linked to one another at a first point, the first strut pivotally connected to a first actuator link at a second point, the second strut pivotally connected to a second actuator link at a third

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point, the second and third points moveable in relation to each other and cause the first point to move towards the ~~second actuator link~~ central portion to compact the extendable member, and cause the first point to move away from the ~~second actuator link~~ central portion to expand the extendable member;

wherein the extendable member is a span fastened to the linkage assembly, the span adapted to contract when the second point and the third point are moved away from each other, and expand when the second point and the third point are moved towards each other.

14. (Original) The implantable medical device of claim 13, wherein the span comprises a folded stack when the span is in the compact position.

15. (Original) The implantable medical device of claim 13, wherein the span is adapted to coil around the central portion when the span is in the compact position.

16. (Original) The implantable medical device of claim 13, further comprising: a sheath that surrounds the span when the extendable member is in the compact position.

17. (Original) The implantable medical device of claim 16, wherein the sheath is removeable after the extendable member has been expanded to the extended position.

18. (Original) The implantable medical device of claim 13, further comprising: a locking mechanism to keep the extendable member at a constant position.

19. (Original) The implantable medical device of claim 18, wherein the locking mechanism comprises a sheath compressed over the first link and the second link.

20. (Original) The implantable medical device of claim 13, wherein the first

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actuator link and the second actuator link are adapted to move in a direction substantially parallel to an axis of the central portion.

21. (Original) The implantable medical device of claim 13, further comprising a mechanism for adjusting the relative positions of the second point and the third point.

22. (Original) An implantable medical device for providing therapy to a body comprising:

an elongate central portion;

at least one extendable member having a tip, the extendable member depending from the central portion and being adapted to assume a range of positions, including a compact position, in which the tip is disposed in close proximity to the central portion, and an extended position, in which the tip is disposed at a location distal from the central portion;

at least one therapy element disposed on the extendable member for delivering therapy to the body;

a linkage assembly for position adjustment of the extendable member in situ, the linkage assembly comprising a first strut and a second strut, the first and second struts each having a first end, a second end, and a center between the respective first and second ends, the first strut and the second strut pivotally linked to one another at their respective first ends at a first point, a first link pivotally connected to the respective first ends of the first strut and the second strut at the first point, and a second link pivotally connected to the center of the first strut and the second strut at a second point, the first point and

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second point adapted to move away from each other to compact the extendable member, and move towards each other to expand the extendable member;

wherein the extendable member is a span fastened to the linkage assembly, the span adapted to contract when the first point and the second point are moved away from each other, and expand when the first point and the second point are moved towards each other.

23. (Original) The implantable medical device of claim 22, wherein the span comprises a folded stack when the span is in the compact position.

24. (Original) The implantable medical device of claim 22, wherein the span is adapted to coil around the central portion when the span is in the compact position.

25. (Original) The implantable medical device of claim 22, further comprising a sheath that surrounds the span when the extendable member is in the compact position.

26. (Original) The implantable medical device of claim 25, wherein the sheath is removeable after the extendable member has been expanded to the extended position.

27. (Original) The implantable medical device of claim 22, further comprising a locking mechanism to keep the extendable member at a constant position.

28. (Original) The implantable medical device of claim 27, wherein the locking mechanism comprises a sheath compressed over the first link and the second link.

29. (Original) The implantable medical device of claim 22, wherein the first actuator link and the second actuator link are adapted to move in a direction substantially parallel to an axis of the central portion.

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30. (Original) The implantable medical device of claim 22, further comprising a mechanism for adjusting the relative positions of the first point and the second point.

31. (Withdrawn) An implantable medical device for providing therapy to a body comprising:

an elongate central portion;

at least one extendable member having an end, the extendable member depending from the central portion and being adapted to assume a range of positions, including a compact position, in which the end is disposed in close proximity to the central portion, and an extended position, in which the end is disposed at a location distal from the central portion, wherein the extendable member is formed as a series of telescoping elements

at least one therapy element disposed on the extendable member for delivering therapy to the body;

a linkage assembly for position adjustment of the extendable member in situ, and

a mechanism for adjusting the relative positions of the extendable member and the central portion.

32. (New) An implantable electric stimulation lead comprising:

an elongate central portion defining a longitudinal direction and a lateral direction generally perpendicular to the longitudinal direction;

an actuator extending generally parallel to the longitudinal direction of the central portion;

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an extendable member;
at least three electrodes arranged on the extendable member,
the extendable member being mounted, via a pivot structure, on the central portion for movement between a compact position in which the electrodes are disposed in close proximity with the central portion, and an extended position in which the electrodes are aligned with each other and at least two of the electrodes are laterally spaced apart from the central portion, the extendable member having a strut having a first portion coupled to one electrode, and a second portion coupled to the actuator,
such that the actuator can cause, via the pivot structure, the first portion of the strut to move laterally, thereby moving the extendable member between its compact and extended positions.

33. (New) The implantable electric stimulation lead of claim 32 wherein the electrodes are disposed on or in a span.

34. (New) The implantable electric stimulation lead of claim 33 wherein the electrodes are in electrical communication with a conductor on or in the span.

35. (New) The implantable electric stimulation lead of claim 33 wherein the span comprises a material selected from the group consisting of polyurethane and reinforced silicone rubber.

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36. (New) The implantable electric stimulation lead of claim 33 wherein the span has an eyelet for fastening a portion of the span to the extendable member.

37. (New) The implantable electric stimulation lead of claim 33 wherein the span has two eyelets for fastening two portions of the span to the extendable member.

38. (New) The implantable electric stimulation lead of claim 37 wherein a tether extends between the two eyelets.

39. (New) The implantable electric stimulation lead of claim 32, having at least four electrodes wherein at least three of the four electrodes move laterally when the extendable member is moved between its compact and extended positions.

40. (New) The implantable electric stimulation lead of claim 32, having at least five electrodes wherein at least four of the five electrodes move laterally when the extendable member is moved between its compact and extended positions.

41. (New) The implantable electric stimulation lead of claim 32, wherein the extendable member comprises a series of struts which are pivotally linked to one another such that at least two electrodes may be caused to move towards or away from the electrode that is

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non-laterally spaced apart from the central portion when the extendable member is in the extended position.

42. (New) The implantable electric stimulation lead of claim 32, wherein the extendable member has a tip at the pivot structure that extends from the central portion.

43. (New) The implantable electric stimulation lead of claim 42, wherein the tip has an electrode.